# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

ORDER NO. 97-113

REVISION TO SITE CLEANUP REQUIREMENTS AND RESCISSION OF ORDER NO. 96-059 FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION
APPLIED MATERIALS INCORPORATED
NCH CORPORATION AND MOHAWK LABORATORIES

for the property located at

974 EAST ARQUES AVENUE COMMERCIAL STREET OPERABLE UNIT, SUBUNIT 2 SUNNYVALE SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Board), finds that:

- 1. Site Location: The site is located at 974 East Arques Avenue, in Sunnyvale. Located on the site is a large building, which is utilized for manufacturing and office space. Hazardous waste storage facilities were also located on the site. Areas surrounding the building are paved. Adjacent properties are developed for commercial and light manufacturing use. Residential areas are located within one quarter mile of the site.
- 2. Site History: Fairchild Semiconductor Corporation (Fairchild) constructed the building located at 974 E. Arques Avenue in 1967, and owned and occupied the property from 1968 to 1972. During that time Fairchild's manufacturing processes at the site included photo resist, screen printing, etching, alodining, and spray painting. TCE was typically used in these processes during that time period. Fairchild also utilized an acid waste neutralization sump at the site.

Hewlett Packard Company (Hewlett Packard) purchased the property in 1972, and utilized the site for light assembly, alodining, metal fabrication, and painting until 1993. From 1978 to 1986 Hewlett Packard used the sump to convey wastewater to the sanitary sewer. Hewlett Packard's use of TCE was short-lived and minor, and was unlikely to have resulted in TCE releases to soil or groundwater, based on site-

specific operations information. Hewlett Packard ceased manufacturing operations at the site in 1993. In 1995, the site was purchased by Applied Materials Incorporated (Applied Materials). The site is currently vacant.

3. Named Dischargers: The pattern of soil and groundwater VOC pollution at the site indicate that releases occurred at the former acid waste neutralization sump. Because Fairchild was the only operator of the sump and the only occupant utilizing TCE in its manufacturing process, Fairchild is named as a discharger. Applied Materials, as the current owner of the site, is also named as a discharger. Applied Materials will be responsible for compliance only in the event that other named dischargers fail to comply with the requirements of this order.

The Board reserves jurisdiction over the question of whether to name Schlumberger Technology Corporation (Schlumberger) or National Semiconductor Corporation (National), given that both firms have acted as parent corporation to Fairchild and given that the Board has not determined whether these firms exercised substantial management and control of Fairchild's activities. Fairchild became a wholly-owned subsidiary of Schlumberger in 1979, and was sold to National in 1987. Schlumberger retained responsibility for environmental cleanup at this site as part of an indemnification agreement with National.

Mohawk Laboratories (Mohawk) and its parent company, NCH Corporation (NCH), are also named as dischargers. Mohawk and NCH are named because VOC pollution originating at their site has most likely contributed to groundwater pollution at the Fairchild site.

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the site where it entered or could have entered waters of the state, the Board will consider adding that party's name to this order.

- 4. Regulatory Status: This site is subject to the following Board orders:
  - o Site Cleanup Requirements Order No. 96-059 adopted April 17, 1996
  - o NPDES Permit Order No. 94-087 adopted July 20, 1994

The purpose of this order is to update the previous Site Cleanup Requirements, and to provide for coordinated groundwater cleanup with other dischargers in the area.

5. Site Hydrogeology: The site is flat, and slopes gently toward the north and San Francisco Bay. Calabazas Creek, approximately .75 miles east of the site, is the nearest surface water. The site is underlain by fluvial deposits consisting of interbedded, laterally discontinuous layers of clay, silt, sand, and gravel. A shallow groundwater zone, generally found between 10 and 30 feet below the ground surface, is referred to as the A-zone aquifer. Groundwater in the A-zone is migrating

northeasterly. A deeper groundwater zone, found between 35 and 50 feet below the ground surface is referred to as the B-zone aquifer. Groundwater in the B-zone is also migrating northeasterly. The hydrogeologic conditions encountered at the site are typical of those found at other sites in the vicinity.

- 6. Remedial Investigation: Soil and groundwater samples obtained at the site indicate that VOCs, including trichloroethylene, 1,1,1-trichloroethane, dichloroethylene, methylene chloride, and perchloroethylene, have impacted soil and groundwater at the site. The source area has been identified as the former acid waste neutralization sump located at the western site edge of the building. Levels of soil pollution in the unsaturated zone across the site are relatively low (less than 1 ppm). However, in the A-zone near the former sump, groundwater pollution has been detected at levels significantly higher then drinking water standards (historical high of 70,000 ppb of TCE). In the B-zone near the former sump, low (less than 5 ppb) to non-detectable levels of pollution have been detected.
- 7. Interim Remedial Measures: In October 1986, Hewlett Packard removed the acid waste neutralization system (including the sump) and excavated approximately 190 cubic yards of soil. In September 1995 an additional 3000 cubic yards of soil was excavated from the saturated and unsaturated zone in the area of the former sump.

In September 1987 Hewlett Packard began extracting groundwater from the area of the former underground sump. Extracted groundwater was treated utilizing an air stripper and discharged to the City sewer system until September 1995, when a reactive wall was installed in the area of the former sump. The reactive wall is effectively remediating A-zone groundwater pollution in the immediate vicinity of the former sump.

Because VOCs are most likely migrating onto the Fairchild site from the upgradient Mohawk site, it is unlikely that Fairchild's interim remedial measures will be sufficient to reduce groundwater pollution levels and prevent VOC plume migration. Expansion of the existing remedial measures in subunit 2 may be necessary because the groundwater pollution levels have increased despite implementation of remedial measures at the site. Expansion of subunit 2 remedial measures is contingent upon the results of additional investigation and groundwater cleanup in subunit 1.

8. Operable Unit and Subunits: The groundwater VOC pollution plume originating from the Fairchild site has migrated northward at least to East Arques Avenue. Fairchild's pollution plume is most likely commingled with a plume originating at the Mohawk Laboratories site to the south. Mohawk is currently cleaning up groundwater pollution at their site, and is implementing interim cleanup measures for the VOC area immediately north of their site.

The area including the Mohawk and Fairchild pollution plumes is referred to as the

Commercial Street Operable Unit (Commercial Street OU, Figure 2). The OU has been divided into two subunits: subunit 1 consists of the Mohawk site and the VOC groundwater pollution plume extending north of Mohawk to East Arques Avenue. Subunit 2 consists of the Fairchild site, which includes the VOC groundwater pollution plume originating at the site, and VOC groundwater pollution migrating onto the site from subunit 1.

Mohawk, as the only confirmed source of VOC pollution within subunit 1, is the discharger named responsible for addressing groundwater pollution in the subunit 1. Mohawk, Fairchild, and Applied Materials, as the sources of VOC pollution in subunit 2, are the dischargers named responsible for addressing pollution in subunit 2.

It is the Board's intent that, commingling notwithstanding, the dischargers named for each subunit are largely responsible for soil and groundwater pollution in their respective subunit. As additional information is generated in each subunit, the Board may modify the dischargers named in each subunit, or the subunit boundaries.

9. Other Sites in the Area: In addition to the Mohawk site, several other sites which are confirmed or potential sources of pollution exist in the vicinity of the Mohawk site. These sites include:

### Operable Unit 1

National Semiconductor Corp.	2900 Semiconductor Drive
United Technologies Corp.	1050 E. Arques Avenue
Advanced Micro Devices	1165 E. Arques Avenue

#### Stewart Drive Operable Unit

999 Arques Avenue Corporation	999 E. Arques Avenue
Sobrato Development Company	968-970 Stewart Drive
CAE Electronics	1077 E. Argues Avenue

## Potential Sources of VOC pollution Within the Commercial Street Operable Unit

City of Sunnyvale Corp. Yard	221 Commercial Street
Proto Engineering	183 Commercial Street
Modern Machine	214 Commercial Street
Western Precision	230 Commercial Street

#### Sources of VOC pollution West of the Commercial Street Operable Unit

Pilkington Barnes Hind 895 Kifer Road

Philips Semiconductor 730 E. Evelyn Avenue

With the exception of the Sunnyvale Corporation Yard, Proto Engineering, Modern Machine and Western Precision, all of the above sites have completed remedial investigations and have implemented, or are in the process of implementing

interim/final groundwater remediation systems.

Staff are currently requiring additional site investigation at the Sunnyvale Corporation Yard, Proto Engineering, Modern Machine, and Western Precision sites in order to determine whether the sites are sources of VOC groundwater pollution. The Board may modify the orders for the Commercial Street OU, depending on additional investigation results.

In addition, should additional investigation indicate that the Commercial Street OU pollution plume has significantly impacted areas beyond the designated Commercial Street OU boundary, the Board may modify the orders for the Commercial Street OU.

10. Basin Plan: The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

The potential beneficial uses of groundwater underlying and adjacent to the site include:

- a. Municipal and domestic water supply
- b. Industrial process water supply
- c. Industrial service water supply
- d. Agricultural water supply
- e. Freshwater replenishment to surface waters

At present, there is no known use of groundwater underlying the site for the above purposes.

11. Other Board Policies: Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels.

12. State Water Board Policies: State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to

this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives.

State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

- 13. **Preliminary Cleanup Goals:** The dischargers will need to make assumptions about future cleanup standards for soil and groundwater, in order to determine the necessary extent of remedial investigation, interim remedial actions, and the draft cleanup plan. Pending the establishment of site-specific cleanup standards, the following preliminary cleanup goals should be used for these purposes:
  - a. Groundwater: Applicable water quality objectives (e.g. maximum contaminant levels, or MCLs) or, in the absence of a chemical-specific objective, risk-based levels (e.g. drinking water equivalent levels).
  - b. Soil: 1 mg/kg total volatile organic compounds (VOCs), 10 mg/kg total semi-volatile organic compounds (SVOCs), and background concentrations of metals.
- 14. Basis for 13304 Order: The dischargers has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.
- 15. Cost Recovery: Pursuant to California Water Code Section 13304, the dischargers are hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
- 16. CEQA: This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
- 17. **Notification:** The Board has notified the dischargers and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to

submit their written comments.

18. **Public Hearing:** The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers (or their agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

#### A. PROHIBITIONS

- 1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
- 2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
- 3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of wastes or hazardous substances are prohibited.

#### B. TASKS

1. WORKPLAN FOR PLUME MIGRATION CONTROL

COMPLIANCE DATE: April 30, 1998

Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives for preventing VOC pollution from migrating beyond the area of subunit 2. The workplan should recommend one or more alternatives for implementation. The workplan should specify a proposed time schedule. Phased work should be described in detail. If additional groundwater extraction is selected as an interim remedial action, then one task will be modification of the current NPDES permit for discharge of extracted, treated groundwater to waters of the State. The application for modification must demonstrate that neither reclamation nor discharge to the sanitary sewer is technically or economically feasible.

## 2. COMPLETION OF PLUME MIGRATION CONTROL MEASURES

COMPLIANCE DATE: December 30, 1998

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 2 workplan. For ongoing actions, such as groundwater extraction, the report should document start-up as opposed to completion.

# 3. PROPOSED FINAL REMEDIAL ACTIONS AND CLEANUP STANDARDS

COMPLIANCE DATE: April 30, 2000

Submit a technical report acceptable to the Executive Officer containing:

- a. Results of the remedial investigation
- b. Evaluation of the installed interim remedial actions
- c. Feasibility study evaluating alternative final remedial actions
- d. Risk assessment for current and post-cleanup exposures
- e. Recommended final remedial actions and cleanup standards
- f. Implementation tasks and time schedule

Item c should include projections of cost, effectiveness, benefits, and impact on public health, welfare, and the environment of each alternative action.

Items a through c should be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), CERCLA guidance documents with respect to remedial investigations and feasibility studies, Health and Safety Code Section 25356.1(c), and State Board Resolution No. 92-49 as amended ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304").

Items a through e should consider the preliminary cleanup goals for soil and groundwater identified in finding 12.

4. **Delayed Compliance**: If the dischargers are delayed, interrupted, or prevented from meting one or more of the completion dates specified for the above tasks, the dischargers shall promptly notify the Executive Officer and the Board may consider revision to this Order.

#### C. PROVISIONS

- 1. No Nuisance: The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).
- 2. Good Operation and Maintenance (O&M): The dischargers shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.
- 3. Cost Recovery: The dischargers shall be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the dischargers over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.
- 4. Access to Site and Records: In accordance with California Water Code Section 13267(c), the dischargers shall permit the Board or its authorized representative:
  - a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
  - b. Access to copy any records required to be kept under the requirements of this Order.
  - c. Inspection of any monitoring or remediation facilities installed in response to this Order.
  - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.
- 5. Self-Monitoring Program: The dischargers shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.

- 6. Contractor / Consultant Qualifications: All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
- 7. Lab Qualifications: All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).
- 8. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:
  - a. City of City of Sunnyvale, Department of Public Safety
  - b. County of Santa Clara, Department of Environmental Health
  - c. Santa Clara Valley Water District

The Executive Officer may modify this distribution list as needed.

- 9. Reporting of Changed Owner or Operator: The dischargers shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.
- 10. Reporting of Hazardous Substance Release: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the dischargers shall report such discharge to the Regional Board by calling (510) 286-1255 during regular office hours (Monday through Friday, 8:00 to 5:00).

A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

11. Rescission of Existing Order: This Order supersedes and rescinds Order No. 96-059.

- 12. **Periodic SCR Review:** The Board will review this Order periodically and may revise it when necessary. The dischargers may request revisions and upon review the Executive Officer may recommend that the Board revise these requirements.
- I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 17, 1997.

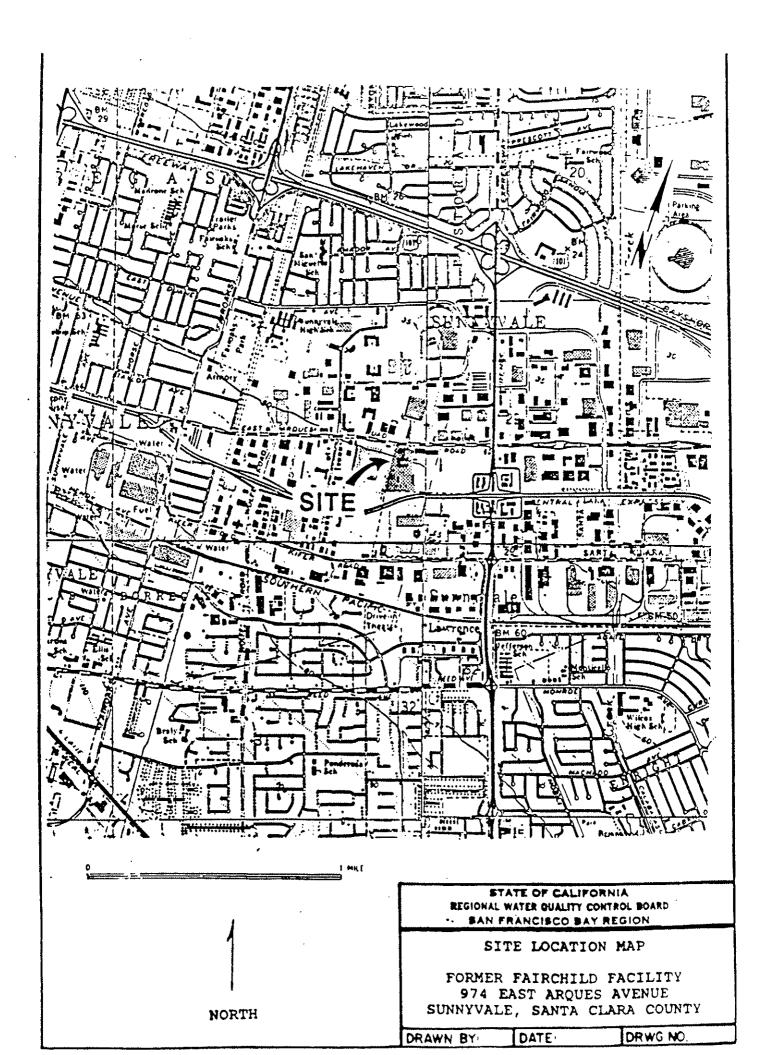
Loretta K. Barsamian Executive Officer

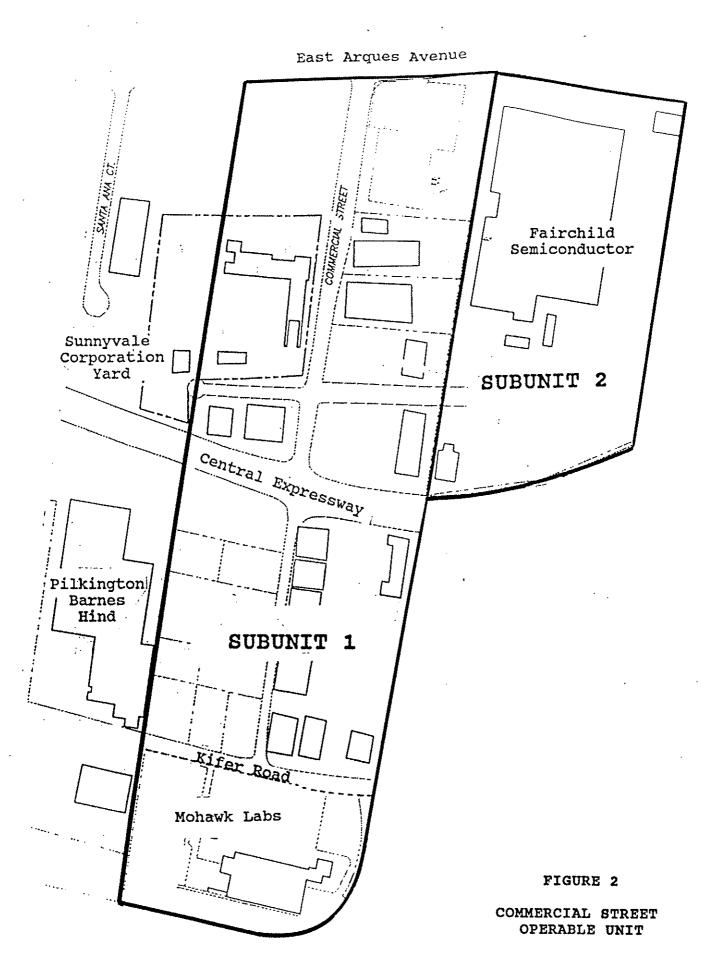
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FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

Attachments: Site Map

Self-Monitoring Program





## CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION

### SELF-MONITORING PROGRAM FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION APPLIED MATERIALS INCORPORATED NCH CORPORATION AND MOHAWK LABORATORIES

for the property located at

974 EAST ARQUES AVENUE COMMERCIAL STREET OPERABLE UNIT, SUBUNIT 2 SUNNYVALE SANTA CLARA COUNTY

- 1. Authority and Purpose: The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order No. 97-113 (site cleanup requirements).
- 2. **Monitoring:** The dischargers shall measure groundwater elevations quarterly in all monitoring wells, and shall collect and analyze representative samples of groundwater according to the following schedule:

Well #	Sampling Frequency	Analyses	Well #	Sampling Frequency	Analyses
EW01A	SA	8010	M17A	A	8010
EW-02	SA	8010	M20A	A	8010
EW-03	SA	8010	M22A	SA	8010
EW-04	SA	8010	M23A	SA	8010
M2A	A	8010	M24A	A	8010
M4A	SA	8010	AEC1	A	8010
M5A	SA	8010	М2В	A	8010
M6A	SA	8010	M4B	A	8010
M7A	SA	8010	M7B	SA	8010

M8A	SA	8010	M20B	A	8010
M12A	SA	8010	M22B	A	8010
M13A	A	8010	M25B	A	8010
M16A	A	8010			

Key: SA = Semi-Annually

8010 = EPA Method 8010 or equivalent

A = Annually

The dischargers shall sample the above groundwater monitoring wells in April and October. Any new monitoring or extraction wells shall be sampled quarterly and analyze groundwater samples for the same constituents as shown in the above table. The dischargers may propose changes in the above table; any proposed changes are subject to Executive Officer approval.

- 3. Semi-Annual Monitoring Reports: The dischargers shall submit semi-annual monitoring reports to the Board no later than 30 days following the end of the second and fourth quarters (e.g. the next semi-annual report is due on July 30, 1998). The reports shall include:
  - a. Transmittal Letter: The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the dischargers' principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.
  - b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map should be prepared for each monitored water-bearing zone. Historical groundwater elevations shall be included in the second semi-annual report each year.
  - c. Groundwater Analyses: Groundwater sampling data shall be presented in tabular form, and an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results shall be included in the second semi-annual report each year. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, need not be included (however, see record keeping below).

- d. Groundwater Extraction: If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the site as a whole, expressed in gallons per minute and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g. soil vapor extraction), expressed in units of chemical mass per day and mass for the quarter. Historical mass removal results shall be included in the second semi-annual report each year.
- e. Status Report: The semi-annual report shall describe relevant work completed during the reporting period (e.g. site investigation, interim remedial measures) and work planned for the following reporting period.
- 4. **Violation Reports**: If the dischargers violate requirements in the Site Cleanup Requirements, then the dischargers shall notify the Board office by telephone as soon as practicable once the dischargers have knowledge of the violation. Board staff may, depending on violation severity, require the dischargers to submit a separate technical report on the violation within five working days of telephone notification.
- 5. Other Reports: The dischargers shall notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.
- 6. Record Keeping: The dischargers or their agent(s) shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Board upon request.
- 7. SMP Revisions: Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the dischargers. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

I, Loretta K. Barsamian, Executive Officer, hereby certify that this Self-Monitoring Program was adopted by the Board on September 17, 1997.

Loretta K. Barsamian

**Executive Officer**